WHAT IS CLAIMED IS:

1. A reluctance generator for an eddy current braking system in a vehicle, comprising:

a stator assembly defining a core space, the stator assembly comprising a field winding and a compensation winding, the field winding operable to induce a field magnetomotive force (MMF) in response to a first excitation, the compensation winding operable to induce a compensation magnetomotive force (MMF) in response to a second excitation; and

a rotor disposed in the core space, the rotor operable to generate an armature magnetomotive force (MMF),

where the compensation MMF balances the armature MMF.

2. The reluctance generator of Claim 1,

where the stator assembly defines a winding volume,

where the field winding is disposed along an outer portion of the winding volume, and

where the compensation winding is disposed along an inner portion of the winding volume.

3. The reluctance generator of Claim 1, where the excitation winding comprises a round wire; and where the compensation winding comprises a rectangular wire.

4. The reluctance generator of Claim 1, where at least one of the first and second excitations comprises a voltage.

5. The reluctance generator of Claim 1, where at least one of the first and second excitations comprises a pulse width modulation excitation.

6. The reluctance generator of Claim 5, where the pulse width modulation has a duty cycle of about 35 percent.

7. The reluctance generator of Claim 1, further comprising:

lamination sections disposed along an interior surface of the stator assembly; and

an armature winding disposed in the lamination sections.

8. The reluctance generator of Claim 7, where the lamination sections define at least one winding slot; and where the armature winding is disposed in the at least one winding slot.

9. The reluctance generator of Claim 7, where the armature winding comprises a square wire.

10. The reluctance generator of Claim 1, where the rotor comprises a first section and a second section disposed on opposite sides of a center ring mounted on a shaft.

11. The reluctance generator of Claim 10, where the center ring is aligned with at least one of the field and compensation windings.

12. The reluctance generator of Claim 10,

where the first section defines multiple first pole sections forming first pole slots; and

where the second section defines multiple second pole sections forming second pole slots.

13. The reluctance generator of Claim 12, where the first pole sections are shifted in relation to the second pole sections.

14. The reluctance generator of Claim 12, where the first and second pole sections are shifted by about one pole slot.

15. The reluctance generator of Claim 12, where the first and second pole sections are offset by about 45 degrees.

16. The reluctance generator of Claim 11,
where the first section comprises four first pole sections; and
where the second section comprises four second pole sections.

17. The reluctance generator of Claim 10, where the center ring has a smaller diameter than one of the first and second sections.

18. The reluctance generator of Claim 1, where the rotor comprises one of an axle and a drive shaft for the vehicle.

19. The reluctance generator of Claim 1 having an output voltage of 42V.

20. A reluctance generator for an eddy current braking system, comprising:
lamination sections disposed along an interior surface of a stator assembly, the lamination sections defining a core space and a winding volume.
a field winding disposed along an outer portion of the winding volume, the field winding operable to induce a field magnetomotive force (MMF) in response to a first excitation;
a compensation winding disposed along an inner portion of the winding volume, the compensation winding operable to induce a compensation magnetomotive force (MMF) in response to a second excitation;
an armature winding disposed in the lamination sections; and
a rotor disposed in the core space, the rotor comprising a first section and a second section disposed on opposite sides of a center ring mounted on a shaft,

the center ring aligned with the excitation and compensation windings, the rotor operable to generate an armature magnetomotive force (MMF),

where the compensation MMF balances the armature MMF.

21. The reluctance generator of Claim 20, where the lamination sections define at least one winding slot; and where the armature winding is disposed in the at least one winding slot.

22. The reluctance generator of Claim 20,

where the excitation winding comprises a round wire;

where the compensation winding comprises a rectangular wire; and

where the armature winding comprises a square wire.

23. The reluctance generator of Claim 20,

where the first section defines multiple first pole sections forming first pole slots; and

where the second section defines multiple second pole sections forming second pole slots.

24. The reluctance generator of Claim 23, where the first pole sections are shifted in relation to the second pole sections.

25. The reluctance generator of Claim 24, where the first pole sections and the second pole sections are shifted by about 45 degrees.

26. The reluctance generator of Claim 20, where the center ring has a smaller diameter than the first and second sections.

27. The reluctance generator of Claim 20, where the shaft comprises one of an axle and a drive shaft in the vehicle.

28. The reluctance generator of Claim 20, where at least one of the first and second excitations comprises a voltage.

29. The reluctance generator of Claim 20, where at least one of the first and second excitations comprise a pulse width modulation excitation.